Fig. 1

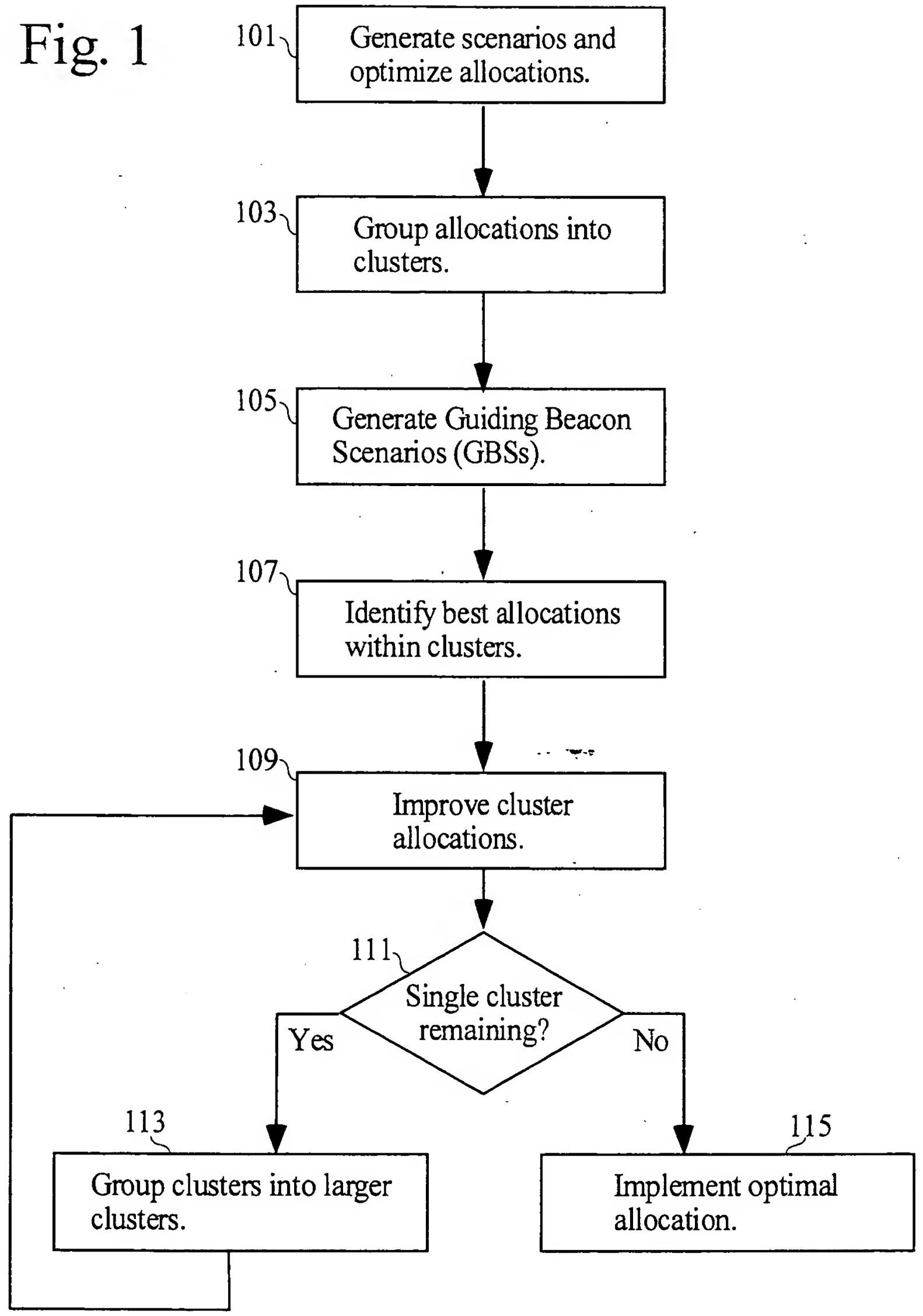

101
Generate scenarios and optimize allocations.
103
Group allocations into clusters.
105
Generate Guiding Beacon Scenarios (GBSs).
107
Identify best allocations within clusters.
109
Improve cluster allocations.
111
Single cluster remaining?
Yes
No
113
Group clusters into larger clusters.
115
Implement optimal allocation.

Fig. 2

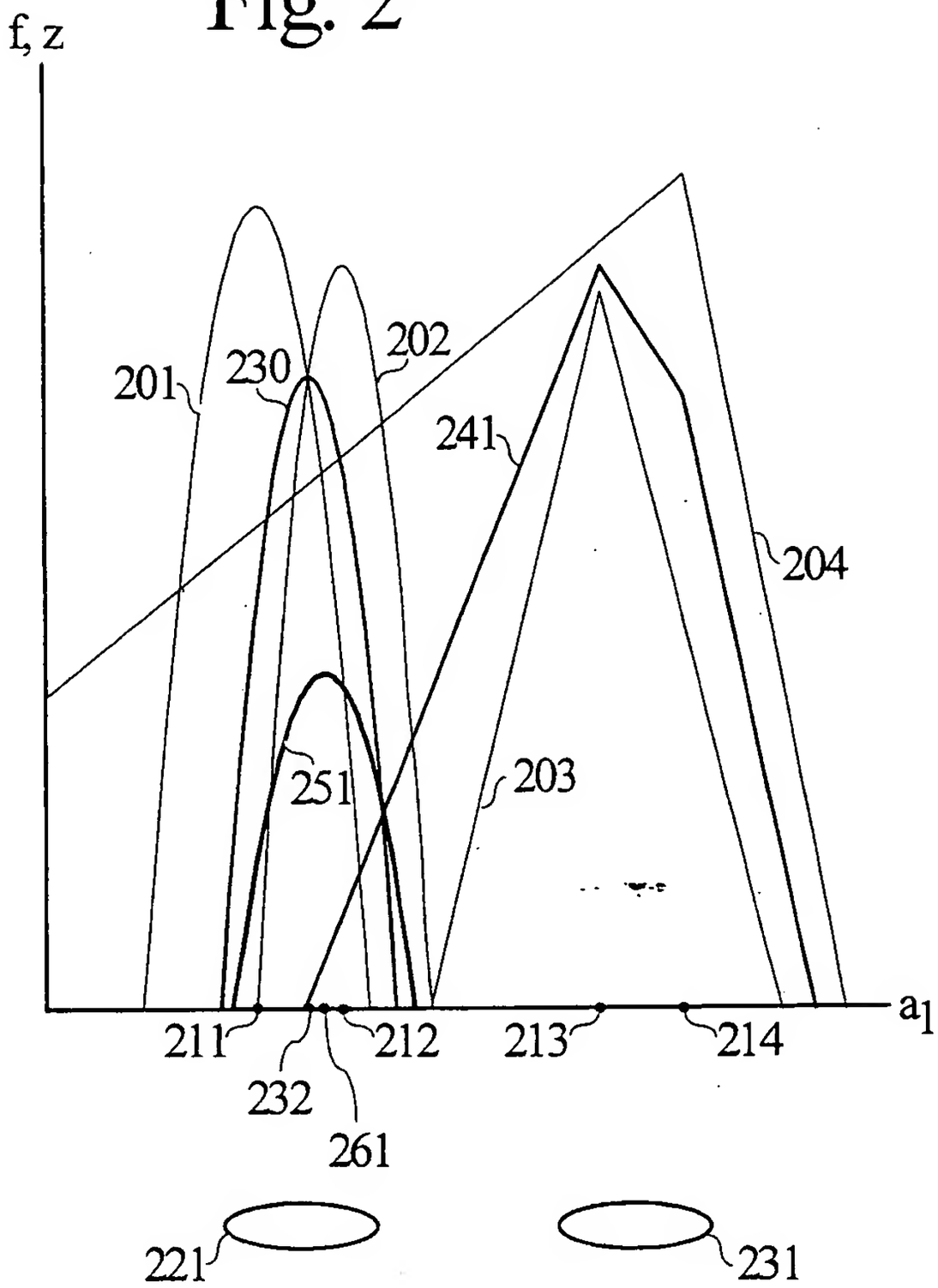


Fig. 3A

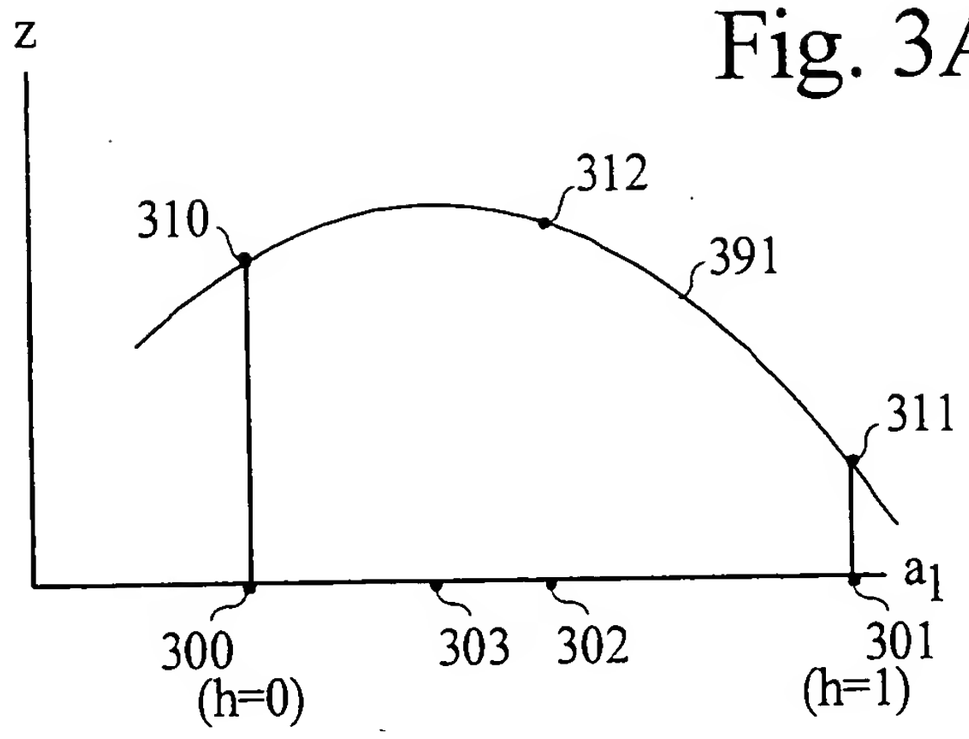


Fig. 3B

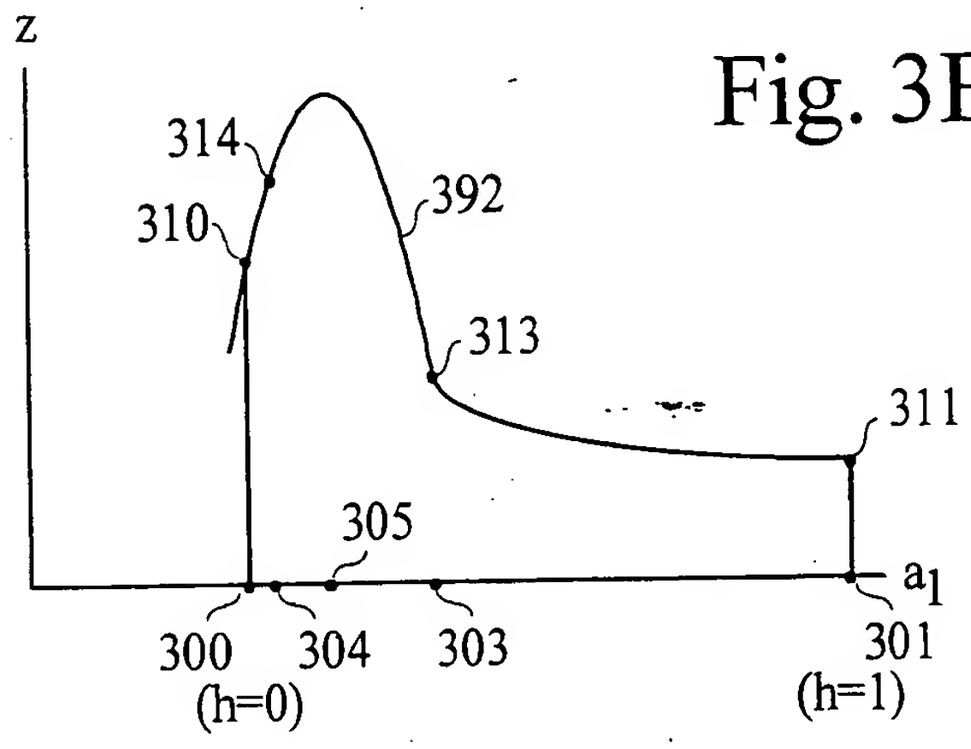


Fig. 3C

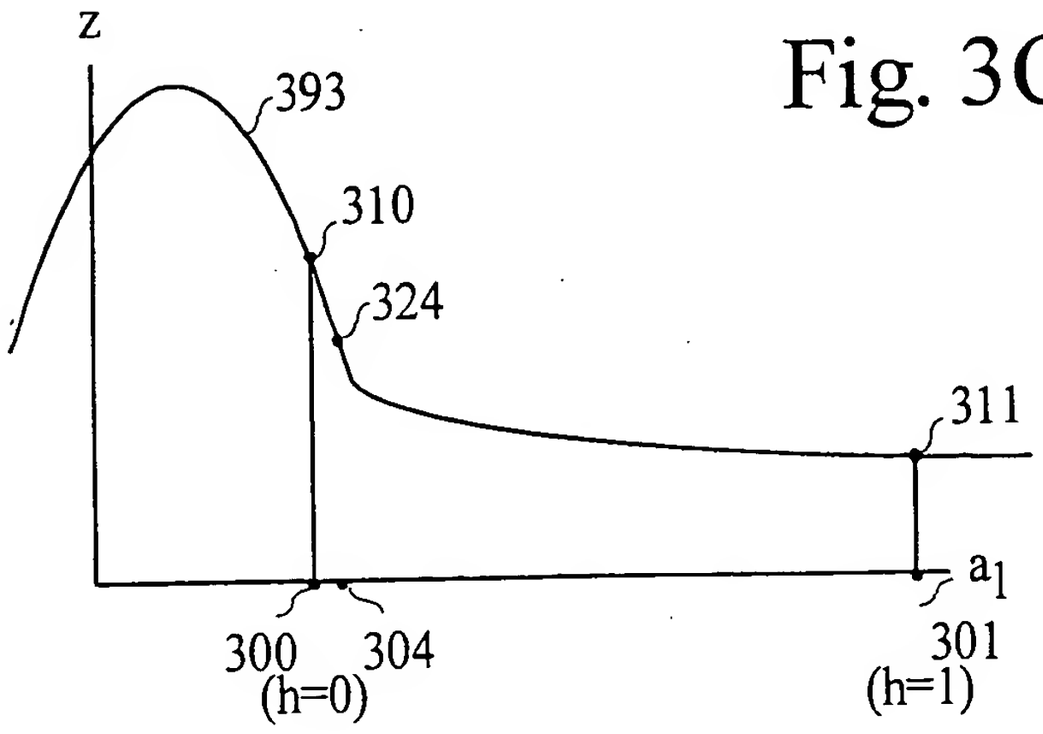
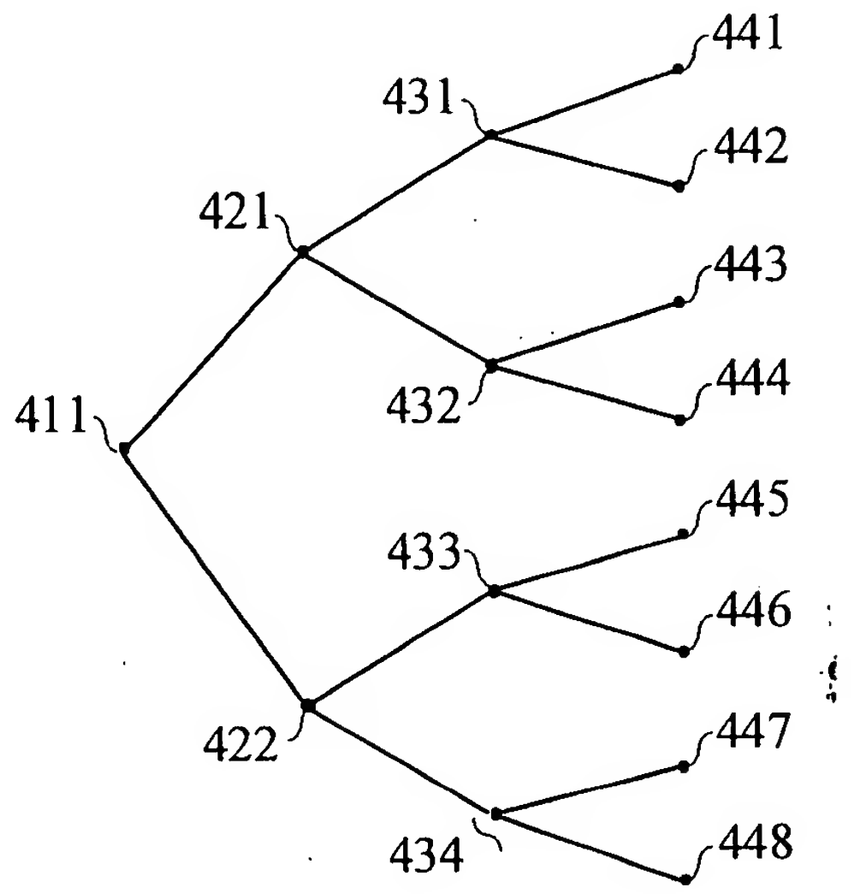


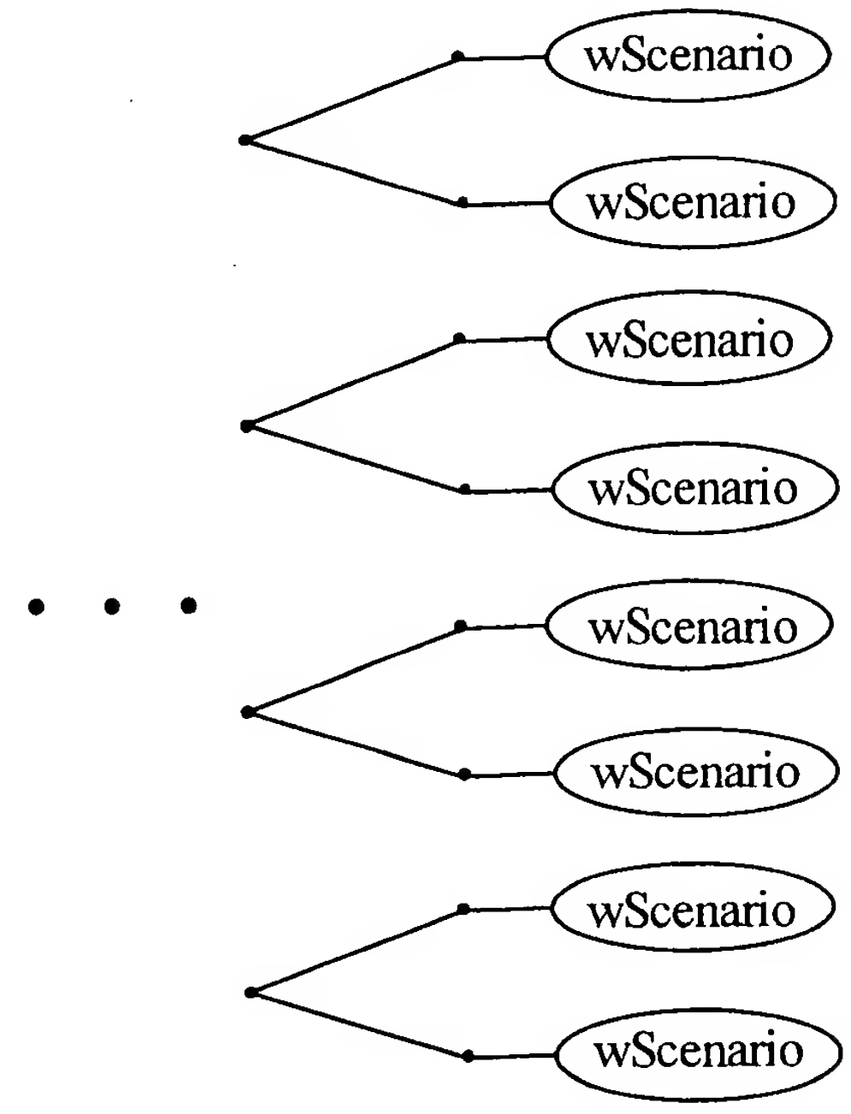
Fig. 4A



a_1 a_2 a_3 a_4

w_1 w_2 w_3

Fig. 4B



$a_{nStage-1}$ a_{nStage}

$w_{nStage-1}$

Fig. 5

```
class WNode : public...
    {
    pGBS;
    pWScenario;
    xAllocRndCntn;
    nodeProbability;
    voa;
    nextWNodeCntn;
    };
```

Fig. 6

```
class WScenario : public...
    {
    wwMatrix;
    pWNode[nStage+1];
    nativeProbability;
    nativeXAlloc;
    NativeOptimizer();
    };
```

Fig. 7

```
class XAlloc : public...
    {
    a1[];
    feasible;
    h;
    voa;
    operator=( XAlloc& s);
    operator==(XAlloc& r);
    operator!=(XAlloc& r);
    };
```

Fig. 8A

```
class WWMatrix : public...
    {
    ww[][nStage];
    h;
    voa;
    };
```

Fig. 8B

```
class AAMatrix : public...
    {
    aa[][nStage+1];
    h;
    voa;
    };
```

Fig. 9

```
EvaluateXAllocAgainstWScenario(xAlloc, wScenario)
    {
    AAMatrix aaMatrix;
    copy xAlloc.a1 to aaMatrix.aa[][1];

    for(iFlexStage=2;iFlexStage<=nStage;iFlexStage++)
        {
        DeterministicOptimizer(iFlexStage, aaMatrix,
          wScenario.pWNode[iFlexStage]->pGBS->wwMatrix);
        }
    xAlloc.voa = aaMatrix.voa;
    }
```

Fig. 10

```
DeterministicOptimizer(iFlexStage, aaMatrix, wwMatrix)
    {
    Assuming that the allocations in aaMatrix for
    stages prior to stage iFlexStage are fixed, and
    that the scenario specified in wwMatrix occurs
    with certainty:
        {
        Apply prior-art techniques to optimize
        allocations for stages iFlexStage to
        nStage.
        }

    Transfer allocations for stage iFlexStage to
    aaMatrix.aa[][iFlexStage]. Transfer
    allocations for stages beyond iFlexStage to
    corresponding columns in aaMatrix.aa.

    ValueAllocation(aaMatrix, wwMatrix);
    }
```

Fig. 11

```
ValueAllocation(aaMatrix, wwMatrix)
    {
    Assess wwMatrix together with aaMatrix.
    Determine an assessed value indicative
    of the desirably of having wwMatrix and
    aaMatrix occur together, as opposed to
    any other pair occurring.

    Set wwMatrix.voa = assessed value;
    Set aaMatrix.voa = assessed value;
    }
```

Fig. 12

```
class ZCluster : public...
    {
    wScenarioCntn;
    xAllocBestCntn;
    xAllocOpt;

    XAllocEvaluator(xAlloc, OKadd);
    ConsiderAppendBestXAlloc(xAllocAdd, xAllocDel);

    Improver();
    SimpleParabolaSearch();
    InnerCompressSearch();
    OuterCompressSearch();
    GenxAlloch(h);
    xAllocHurdle;
    wasImproved;
    xAlloc0;
    xAlloc0off;
    xAlloc1;
    xAlloch;
    xAllocBnd;
    };
```

Fig. 13A

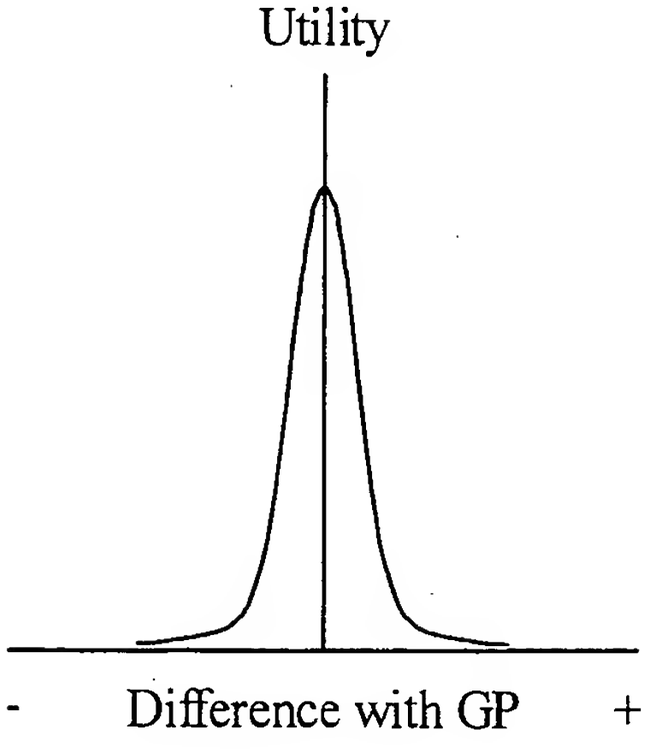


Fig. 13B